



Solid Waste Shredder



The U.S. Navy developed the Solid Waste Shredder to process shipboard plastics, metal and glass. The Solid Waste Shredder is designated as a Plastics Shredder for plastic waste use, and as a Metal and Glass Shredder for metal and glass.

Solid Waste Shredders allow the U.S. Navy to comply with the National Defense Authorization Act for Fiscal Year 1997. This legislation allows for the discharge of shredded metal and glass beyond 12 nautical miles from any shoreline by December 2000.

Plastic Shredders were produced for U.S. Navy ships with the Plastics Waste Processors contracts beginning in 1995. A contract for Metal and Glass Shredders for U.S. ships was awarded in 1997. Metal and Glass Shredder installations aboard U.S. Ships will be completed by 31 December 2000.

Glass containers and metal (primarily food cans) are shredded into a sinkable form using the Solid Waste Shredder and then bagged for disposal at sea. Plastic waste is shredded to break down large containers and provide a homogeneous mix prior to being placed in Compress Melt Units for further processing. The Solid Waste Shredder is designed to unjam itself if hard-to-process or unshreddable objects are encountered. Specially designed blow-out panels allow the shredder to withstand the unlikely event of an explosion and direct the explosive force away from the operator.

The Solid Waste Shredder is easy to use and is designed to meet rugged shipboard operating conditions.

The Solid Waste Shredder consists of:

- A control enclosure containing the operator controls, indicators and programmable logic controller, which senses safety conditions and system overloads.
- A main switch enclosure located between the shredder and the ship's electrical system.
- A feed hopper that provides a pathway to the shredder chamber for solid waste material.
- A shredder chamber where shredding occurs.
- A drive system that operates the cutter blades.
- A collection area where shredded waste is deposited.

Solid Waste Shredder Characteristics:

Performance:

Processing Rate:	250 pounds (113 kg)/hr metal and glass; 80 pounds (36 kg)/hr plastics
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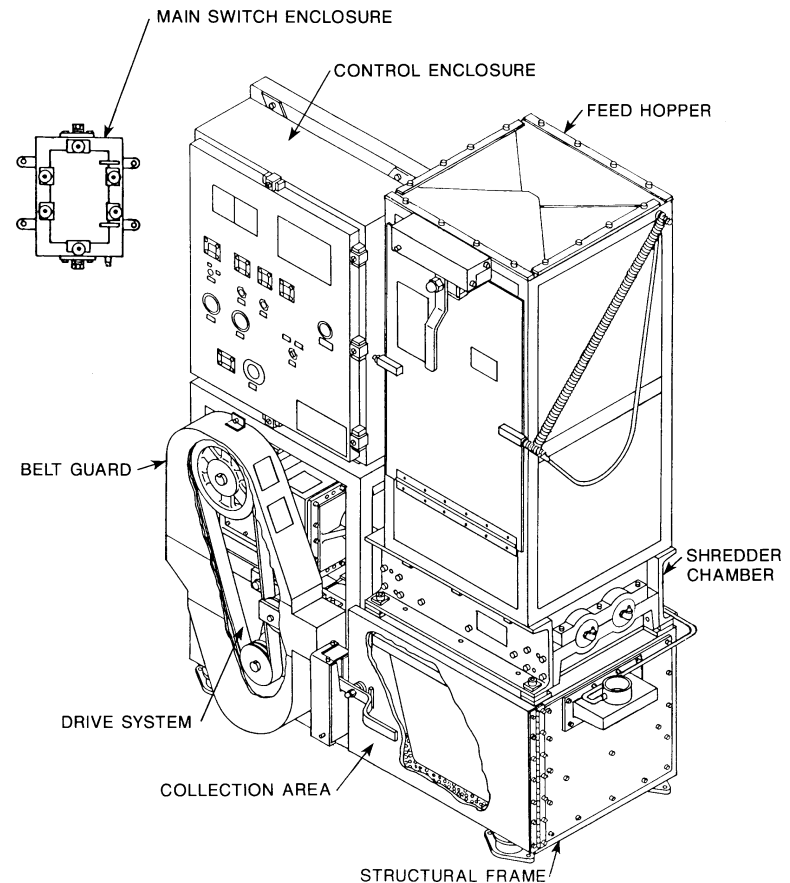
Envelope:

Weight:	1,800 pounds (817 kg)
Footprint:	52 inches (1.3 m) wide by 25 inches (0.6 m) deep by 77 inches (2 m) high
Operational Envelope:	60 inches (1.5 m) wide by 72 inches (1.8 m) deep by 78 inches (2 m) high

Services:

Electrical Power:	440 Volts alternating current, three-phase, 25 Amps, 60 Hertz
Ventilation Supply:	100 standard cubic feet per minute at 0.25 inches H ₂ O minimum (47.2 L/s at 0.06 kPa)

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THE SHREDDER IS EASILY OPERATED AS FOLLOWS:

- The operator opens the sorting tray door and places solid waste material on it. The operator inspects and removes non-shreddable materials, hazardous waste, or pressurized containers before loading the solid waste material into the shredder feed hopper.
- After the shredder is loaded with solid waste, the operator raises the sorting tray and latches it shut.
- The operator presses the start pushbutton initiating a timed shredding cycle. Two counter rotating shafts with converging blades shred the solid waste.
- After the shredder stops, the operator removes the shredded material and bags it for disposal. The Metal and Glass Shredders, which have combs between the cutter blades to assist the shredding process, shreds for 30 seconds after the operator presses the start pushbutton. The Plastics Shredder, without combs, operates for 60 seconds.
- Shredding metal and glass produces a volume reduction of three to one before the waste is placed in burlap bags for overboard discharge. Plastic waste is deposited into a plastic bag and transferred to a Compress Melt Unit for further processing.
- U.S. Navy shredders are dedicated to either “plastic” or “metal and glass” to prevent the inadvertent at-sea disposal of plastics.



Personnel and Training Requirements:

- Manpower requirements for operation can be met by the ship's complement of food mess or storekeeper type personnel.
- Computer-operated design simplifies operation and helps with problem troubleshooting.
- The Solid Waste Shredder is considered as typical hull, machinery and electrical type equipment for maintenance purposes.
- A computer-based training curriculum has been developed to effectively train operator and maintenance personnel.
- The Solid Waste Shredder is outfitted with a number of safety devices and interlocks to prevent injury to the operator.
- Solid Waste Shredder operators are required to wear safety gloves, aprons, face shield, and hearing protection.

Logistics and Maintenance Support:

- Technical Manuals to operate, maintain, troubleshoot and repair the equipment are provided.
- Detailed step-by-step scheduled preventive maintenance procedures are developed.
- Repair parts are readily available.
- Minimal special tools and consumable items are required.

- The Solid Waste Shredder shreds plastic waste or metal and glass.
- Shredded metal and glass produces a volume reduction of three to one.
- The Solid Waste Shredder is easy to use and is very rugged.
- All components of the Solid Waste Shredder are fully modular.
- One sailor easily and safely operates the Solid Waste Shredder.

Equipment Compatibility/Operability

- Designed and tested for shock, vibration, electromagnetic interference, airborne/structureborne noise, and magnetic compatibility.
- A power disconnect switch is installed between the shredder and the ship's electrical system.

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

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WASTE SHREDDER KEY FEATURES

